

## Mendelian Genetics

**Monohybrid** problems deal with only **1 trait**. For example, a trait may be “color” or “height”. **Dominant** genes are represented by capital letters (**T**) while **recessive** genes are represented by lowercase letters (**t**).

Mendel stated that traits are either **DOMINANT** or **RECESSIVE**. There are No blended traits.

- ❖ Genotypes can be: (TT), (tt), (Tt)
- ❖ Example: Albinism (recessive), Cystic fibrosis (recessive), Sickle cell anemia (recessive), Tay-Sachs disease (recessive), Huntington’s disease (dominant)

**But Genetics is more complicated than Mendelian Genetics.**

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### Drag and Drop Mendelian Genetics Practice Monohybrid Punnett Squares

**Directions:** You may use pen/paper to assist you with solving problems.

1. Drag & Drop the (**P1**) genes into the **CROSS** box to create the genetic cross. Place the Parent (**P1**) genes on both sides of the "x" symbol.
2. Set up Punnett square: Drag & Drop the (**P1**) genes to Top Parent now you are ready to Drag & Drop the remaining (**P1**) genes to Side Parent.
3. Drag & Drop (**F1**) genes to fill in the Offspring boxes. There may be genes left over.
4. Answers are **SPECIFIC** – If drag & drop Allele doesn’t match correctly you will not be Able to Drag & Drop it there. Keep trying. Once you find the correct match alleles will drop in box. **Good luck!**
5. **Solve the questions** in the bottom box. **For percent answers, include the percent sign with no space after the numbers (ie.75%). For word answers, use all small letters (ie. yes).**

**Practice Problem 1: Monohybrid** - Cross a heterozygous tall plant x heterozygous tall plant. (T = tall, t = dwarf).

**Drag & Drop ONE allele per Cross Box.**

P1

T

T

t

t

Cross: 
 

x

P1

T

T

t

t

TT

Tt

tt

Tt

F1

Punnett Square:


- Q1. What percent of the offspring are homozygous dwarf plants?
- Q2. What percent of the offspring are heterozygous tall plants?

**Problem 2: Monohybrid** – Red eyes are dominant over pink-eyes.

**Question:** What will the offspring look like if you mate a **Homozygous dominant** red-eye fly and a pink-eye fly. (R = Red, r = pink).

**Drag & Drop ONE allele per Cross Box - Use Color Coding Red & Pink.**

P1 R r R r

Cross:   x

P1 R r R r

F1 RR Rr rr

RR Rr rr

RR Rr rr

RR Rr rr

Punnett Square:

	<span></span>	<span></span>
<span></span>	<span></span>	<span></span>
<span></span>	<span></span>	<span></span>

Q1. What is the genotypes of these F1 offspring?

Q2. Give phenotype of the F1 offspring.